

The General Approach to Study Effective Thermal Parameters in Two-Layer Structure Under Photothermal Experiment

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From our point of view the effective parameters of any nature in general case one must to determinate from condition of equality signals measured from real two-layer structure and effective one-layer sample. Therefore the effective parameters depend not only on properties of the constituents values but on the manner of measurements and the point of measurements too. Hence it follows that one-valued effective parameters does not exist. Different measurements lead to different values of it.

The photothermal experiments indicate the absolute temperature response on the one of the sample sides. So effective thermal conductivity and effective thermal diffusivity can be obtained from comparison temperatures on the left or right surfaces of two-layer and effective one-layer samples. The direct calculations show that this values are different in general case.

Separately it is examined the role of interface heat properties on the forming of effective thermal conductivity and thermal diffusivity. It is shown its strong influence on the finite results.

The good agreement with experiment is received.